

of microcephalic individuals is far from approaching that of Monkeys; it is more dissimilar to the latter than the human brain of normal structure, the occipital and parietal lobes being much reduced, leaving the cerebellum uncovered. There is, therefore, no transition from the human brain to that of Monkeys, any more than from the human skull to that of the Ape. When we take into consideration all that we know of normal and abnormal structure in Man and the Ape, we find that both are as widely separated from each other (*i. e.* without any intermediate forms) as mammals and birds, as *Ornithorhynchus* and *Struthio*. Everything in zoology and physiology contradicts those far-going, genealogical affinities, metamorphoses, and transitions which are demanded by Darwin. "*Man and Monkey are creatures primitively and absolutely distinct, even if we ignore all psychological considerations.*"

*On the Spermatophora of some Hirudinei.* By M. C. ROBIN.

The author has discovered the occurrence of Spermatophora in *Nepheles*, in which they present remarkable peculiarities. They pass entirely from the reservoir in which they are produced into the female apparatus before the latter contains any trace of ovules; so that in these animals, contrary to what takes place in others, the fecundating fluid arrives in the female organs before they contain any eggs. It is only after the penetration of the spermatophora that the eggs make their appearance in the interior of these bodies, the size of which increases in proportion to the growth and number of the ovules. From being spermatophora in the male organs, they become ovo-spermatophora in the ovarian tubes.

At the period of copulation each of the ovoid sacs which terminate the male apparatus of the *Glossiphoniæ* is filled with a spermatophore, which nearly exactly reproduces its form, and the two also unite by a common extremity in the simple portion of the canal which opens at the male genital pore.

On separating these Annelides from each other during copulation, the two spermatophora may be seen issuing from the genital pore of the male: sometimes they have only partially escaped; sometimes they are entirely extruded, and adhere to the body of one or other of the animals. They are of a brilliant silvery white colour and of a most elegant form. They are 3 millim. in length and  $\frac{1}{2}$  millim. in diameter. They are club-shaped, with the large extremity turned backwards and prolonged into a fine, slightly curved point, the length of which is equal to or greater than the greatest diameter of the spermatophore; they terminate in front in a slender portion nearly as long as the thickened part; they have a common cavity anteriorly for about one-fourth of their total length.

Each spermatophore fills the cavity of the sac which terminates the male generative apparatus. The elongated point of the thick extremity is engaged in the flexuose genital duct; the common portion corresponds with the single duct which opens at the genital pore. The wall of the spermatophore is from  $\frac{4}{100}$  to  $\frac{6}{100}$  millim. in

thickness and formed of a tenacious, dense mucus, which refracts light and gives it a yellowish tint posteriorly, where it is thickest.

As soon as the twin spermatophore comes in contact with the water, a white pearly substance escapes from it continuously in the form of a filament, and becomes gradually disaggregated in the liquid. By a high magnifying power this is seen to consist of spermatozoids, with a certain number of fine molecular granules, which abound especially in the last portions of the matter.

In *Nephelis* a spermatophore of the same kind may be detected in each of the sacs terminating the male organs. They are white, ovoid, and a little flattened; their length is about 1 millim., and their breadth about  $\frac{1}{3}$  millim. Each of these is independent of the other, and closed at all points. Their contents are analogous to those of the same bodies in the *Glossiphonia*, but their envelope is colourless, and much softer and more delicate.

These spermatophora are found superposed, to the number of two or four, close to the bottom of the slender portion of each of the ovarian tubes. They are similar to what they were in the sacs of the male organ, but their volume has become a little greater and their envelope a little thicker. Besides these, in the dilated ascending portion of the same female organs, there exist two or four other analogous, but vermiform, bodies, 2 or 3 millim. in length, a little inflated in the middle, narrowed to the two extremities. These owe their volume to the ova developed within them. These bodies have a colourless envelope, striated longitudinally, scarcely granulated, thicker and more resistant than that of the preceding ones, from which they are distinguished by the ovules in course of evolution which they contain in the midst of the spermatozoids. They thus constitute true ovo-spermatophora. The ovules are more numerous and more advanced in their evolution in proportion as the spermatophora in which they are seated are nearer to the genital orifice.

The ovules complete the whole of their evolution up to the period of fecundation within the ovo-spermatophora, and in immediate contact with the fecundating corpuscles. In each spermatophore they are seen in every stage of growth. The most developed ones are always seen in the middle and largest part of the bodies, from which they escape as they are fecundated. They escape by dehiscence, in consequence of a gradual thinning of the envelope during the formation of the corneous protective capsules. They are then found free in the oviducts to the number of from four to twelve on each side; between the vitelline membrane and the vitellus they have a considerable number of spermatozoids, which are generally already motionless. If mature ovules be taken in the ovo-spermatophora, the penetration of the spermatozoid into the ovule through certain points of the vitelline membrane may be traced; the spermatozoids are seen moving for an hour or two round the vitellus before the extrusion of the eggs; then some of them become liquefied and unite with the substance of the vitellus.—*Comptes Rendus*, August 12, 1861, p. 280.